

CLAIMS

- Sub 1
1. ✓ Mixing apparatus comprising a plurality of vertically-arranged levels of mixing compartments, each level of mixing compartments comprising  $M^N$  compartments where  $M \geq 2$  and  $N \geq 2$ , each compartment having an openable bottom, each level of compartments being rotationally displaceable relative to the adjacent level or levels, and there being at least  $N+1$  levels of mixing compartments.
  2. Mixing apparatus according to claim 1, the compartments being angularly spaced, each compartment being disposed outwardly from a common origin, the centre of each compartment being equiangularly displaced from the centre of each adjacent compartment.
  3. Mixing apparatus according to either one of claims 1 or 2, the first and subsequent alternate levels being in a fixed position and the second and subsequent alternate levels being moveable.
  4. Mixing apparatus according to either one of claims 1 or 2, the first and subsequent alternate levels being moveable and the second and subsequent alternate levels being in a fixed position.
  5. Mixing apparatus according to any one of the preceding claims, wherein  $M=2$  and  $N=3$ .
  6. ✓ A method of mixing matter, comprising the steps of:
    - i) placing the matter to be mixed in the first level of mixing compartments of mixing apparatus according to any one of the preceding claims;

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ii) arranging the first level of mixing compartments relative to the mixing compartments of the level below such that upon emptying the compartments of the first level, the contents of each mixing compartment will be equally divided between the M adjacent mixing compartments below;

iii) for each whole number X in the series 1 to M;

iv) starting with compartment X, emptying the contents of it and each subsequent Mth compartment into the compartments of the level below;

v) rotating the first level and the level below relative to each other;

the starting compartment X of step (iv) and the direction and amount of rotation in step (v) resulting in exponential mixing;

vi) repeating steps (iv) and (v) until  $X=M$  with the exception of step (v) when  $X=M$ ; and

vii) repeating steps (iii) to (vi) for each subsequent level of compartments, and increasing the starting compartment of step (iv) each time until  $X=M$ , in which case the starting compartment of step (iv) should be decreased each time until  $X=1$ , in which case it should again be increased each time.

7. A method of mixing according to claim 6, wherein  $M=2$  and the rotation of step (v) comprises rotating the first level clockwise relative to the level below by  $(360/M) + (360/M^N)$  degrees, each subsequent rotation being in the same direction as previously,

8. ~~A method of mixing matter according to either one of claims 6 or 7, additionally comprising the step of releasing the mixed matter for collection.~~

Sub A<sup>2</sup>

add A<sup>3</sup>